

REMARKS

Claims 19-38 were pending in this application prior to amendment herein. Claims 19 is objected to due to a typographical error. Claims 19-18 are rejected under 35 USC 112, second paragraph. Claims 19-26 and 34-36 are rejected under 35 USC 102(b) as being anticipated by Kurz. Claims 37 and 38 are rejected under 35 USC 103(a) as being unpatentable over Kurz. Claims 27-33 are rejected under 35 USC 103(a) as being unpatentable over Kurz in view of McCay.

The Applicant has cancelled claims 19-38 herein and replaced them with claims 39-44 in order to render moot the claim objection and rejections under 35 USC 112 and in order to more clearly focus the claims on the novel and nonobvious aspects of the present invention.

With regard to the Kurz patent, the Applicant notes that newly presented claims 39-44 are directed to a method of producing without the use of a mould a complete three-dimensional body having an inner cavity. Kurz fails to disclose such a process since Kurz is focused on the repair of already molded products, such as the repair of blades of a gas turbine. Kurz fails to recognize and does not disclose the claimed steps of "disposing a first partial quantity of starting material, the first partial quantity having a shape different from a desired shape of the three-dimensional body" and of "exposing the first partial quantity to a controlled pattern of energy effective to compact only a portion of the first partial quantity to form a shape with outer and inner dimensions." Kurz teaches away from such limitations by disclosing only the instant melting of a stream of powder 44 and specifying that "the material is first completely melted." (column 5, line 57) Because Kurz teaches away from these substantive limitations of new independent claim 39, all of the newly presented claims are novel and nonobvious over Kurz.

Dependent claims 40-44 add additional limitations directed to various aspects of producing a material property gradient with the claimed method. The Examiner relies on McCay for teaching "performing the laser modification process on selective and localized regions (see McCay column 6, line 47)" and "varying the composition of the precursor materials (see McCay column 7, lines 5-6)." However, these sections of McCay are not the same as the claimed method steps and do not support rejections under 35 USC 103.

For example, column 6, line 47 of McCay only teaches that some areas of a surface may be treated and some may be left untreated. This does not teach the claimed use of material composition gradients within a layer and between different layers.

Further, column 7, lines 5-6 of McCay simply teaches that it is possible to vary composition between various applications of the McCay process to achieve alloys that are otherwise not traditionally available. McCay obviously can not teach or suggest varying the composition between layers since he described only a single-layer process. Also, McCay does not teach or suggest varying the composition within a layer, but rather clearly illustrates only a single alloy material in his precursor alloy material layer of FIG. 1A. He also clearly discusses only "a desired alloying metal" (singular) at column 2, line 32 and at other locations. The Examiner has taken column 7, lines 5-6 out of context and has applied a presupposition of the Applicant's invention to draw a broad and otherwise unsupported interpretation from the text of McCay. It is only the Applicant's invention that has guided such hindsight and such a broad interpretation of this portion of McCay is not enabled for the Applicant's claimed invention. Accordingly, the limitations of newly presented claims 40-44 add further patentability to the Applicant's invention.

Further, dependent claim 41 adds the limitations of "disposing a nickel-based or cobalt-based superalloy powder to form an inner region of the selected one of the partial quantities, and disposing an MCrAlY alloy powder to form an outer region of the selected one of the partial quantities." Nothing in the cited prior art teaches or suggests such beneficial limitations.

Further, dependent claim 42 is specifically applied to a turbine blade and includes the further limitations of "varying the material composition of the selected partial quantity between a first side and a second side so that the formed layer has a composition gradient between a convex side and a concave side of the turbine blade." No such teaching or suggestion exists in the cited prior art.

Finally, dependent claim 44 adds the limitations of "disposing a starting material comprising reinforcing fibres for a first selected partial quantity and disposing a starting material without reinforcing fibres for a second selected partial quantity so that a first of the respective formed layers comprises the reinforcing fibres and a second of the respective formed layers lacks any reinforcing fibres." No such teaching or suggestion exists in the cited prior art.

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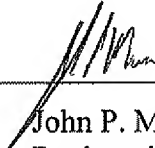
Conclusion

The newly presented claims 39-44 are believed to be in condition for allowance. The Commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including the fees specified in 37 C.F.R. §§ 1.16 (c), 1.17(a)(1) and 1.20(d), or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

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